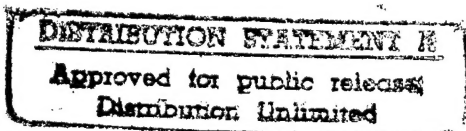


FINAL REPORT
MAY 1995

REPORT NO. 93-19

DOUBLE SECONDARY STEEL
CONTAINERS (SSCs) FOR
STORAGE OF LEAKING
M55 CHEMICAL ROCKETS



19960827 104

Prepared for:
U.S. Army Armament, Munitions
and Chemical Command
ATTN: AMSMC-DSD-AS
Rock Island, IL 61299-6000

Distribution Unlimited



VALIDATION ENGINEERING DIVISION
SAVANNA, ILLINOIS 61074-9639

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<p>The U.S. Army Defense Ammunition Center and School (USADACS), Validation Engineering Division (SMCAC-DEV), was tasked by U.S. Army Armament, Munitions and Chemical Command (AMCCOM) to perform leak integrity tests on two SSCs joined together. These tests were conducted following modification of the SSC flanges so the two units could be joined together. These modified SSCs will be used as a second overpack for leaking M55 chemical rockets. This report contains results of the tests conducted.</p>						
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED			
22a. NAME OF RESPONSIBLE INDIVIDUAL JEROME H. KROHN			22b. TELEPHONE (Include Area Code) 815-273-8929		22c. OFFICE SYMBOL SMCAC-DEV	

U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL
VALIDATION ENGINEERING DIVISION
SAVANNA, IL 61074-9639

REPORT NO. 93-19

DOUBLE SECONDARY STEEL CONTAINERS (SSCs) FOR STORAGE OF
LEAKING M55 CHEMICAL ROCKETS

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PART 1

INTRODUCTION

A. BACKGROUND. The U.S. Army Defense Ammunition Center and School (USADACS), Validation Engineering Division (SMCAC-DEV), was tasked by U.S. Army Armament, Munitions and Chemical Command (AMCCOM) to perform leak integrity tests on two SSCs joined together. These tests were conducted following modification of the SSC flanges so the two units could be joined together. This approach was taken so multiple M55 rockets could be overpacked at one time versus the current procedure of Single Round Containers (SRCs) for each rocket. This container will not be used to overpack M55 rockets that are not already in a first overpack.

B. AUTHORITY. This program was conducted IAW mission responsibilities delegated by the U.S. Army Armament, Munitions and Chemical Command (AMCCOM), Rock Island, IL.

C. OBJECTIVE. The objective of these tests was to verify that the SSCs, following modification, could still maintain their leak integrity and be used as chemical storage overpack containers.

D. CONCLUSION. All modified double SSCs had no detectable leaks in the 1×10^{-6} cc/he/sec/1.5 psi leak rate ranges with the exception of three containers (serial numbers 3117, 2544, and 3437), which had leak rates of 4×10^{-6} cc/he/sec/1.5 psi, 2×10^{-6} cc/he/sec/1.5 psi, and 2×10^{-6} cc/he/sec/1.5 psi, respectively. The maximum sensitivity of the tests conducted was 1×10^{-6} cc/he/sec/1.5 psi. All containers passed leak rate requirements for depot chemical storage containers.

PART 2

30 NOVEMBER - 1 DECEMBER 1994

ATTENDEES

William R. Meyer
General Engineer
DSN 585-8090
815-273-8090

Director
U.S. Army Defense Ammunition Center
and School
ATTN: SMCAC-DEV
Savanna, IL 61074-9639

Bradley J. Haas
Mechanical Engineer
DSN 585-8336
815-273-8336

Director
U.S. Army Defense Ammunition Center
and School
ATTN: SMCAC-DEV
Savanna, IL 61074-9639

PART 3

TEST PROCEDURE

Helium-leak tests were performed at 1.5 +/- 0.5 psi with the use of a mass spectrometer and a sampling probe (referred to as the helium quick test). This test method has a maximum sensitivity of 1×10^{-6} cc/he/sec/1.5psi and was used due to the large physical size of the items being tested.

PART 4

TEST ITEM

Two SSCs Joined Together

- | | |
|----------------------------|----------------|
| a. Height: | 48.0 inches |
| b. Width: | 33.3 inches |
| c. Length: | 84.5 inches |
| d. Gasket: | butyl rubber |
| e. Torque on Flange Bolts: | 30 ft-lbs. |
| f. Total Tested: | 63 double SSCs |

PART 5

TEST RESULTS

A total of 63 double SSCs joined together were tested following modification. With the exception of three SSCs joined together (serial numbers 3117, 2544, and 3437), all containers had no detectable leaks. The three SSCs that did leak had leak rates of 4×10^{-6} cc/he/sec/1.5 psi, 2×10^{-6} cc/he/sec/1.5 psi, and 2×10^{-6} cc/he/sec/1.5 psi, respectively. It should be noted that the maximum sensitivity of the tests conducted was 1×10^{-6} cc/he/sec/1.5 psi; therefore, the true leak rate for all but the three containers listed above is not known. Table 1 below lists the serial number and leak rate for each container.

Table 1
Helium Leak Tests
Double SSC's

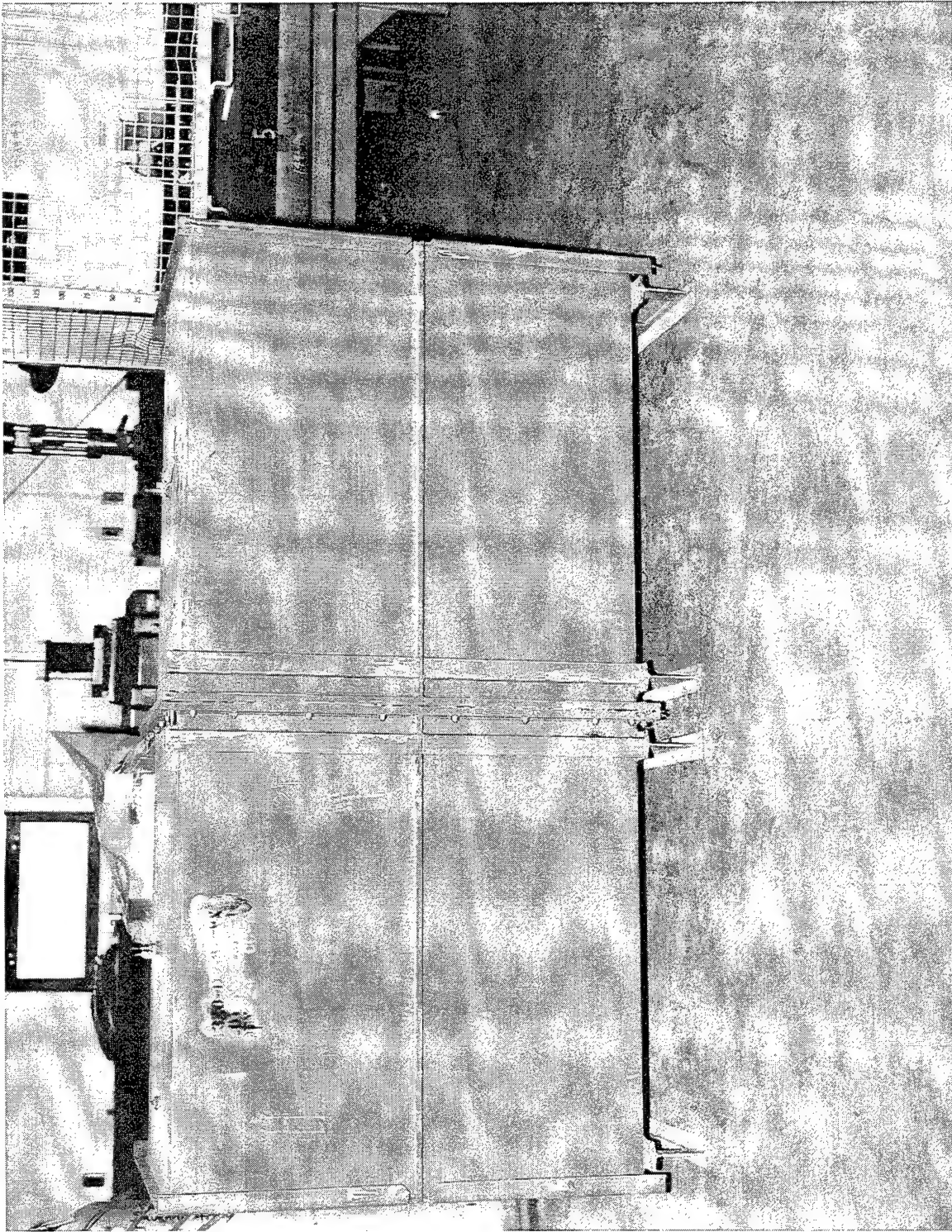
<u>SSC Serial Number</u>	<u>Leak Rate cc/he/sec/1.5psi</u>
0099	$<1 \times 10^{-6}$
0176	$<1 \times 10^{-6}$
0195	$<1 \times 10^{-6}$
0217	$<1 \times 10^{-6}$
0224	$<1 \times 10^{-6}$
0283	$<1 \times 10^{-6}$
0309	$<1 \times 10^{-6}$
0571	$<1 \times 10^{-6}$
0000	$<1 \times 10^{-6}$
0581	$<1 \times 10^{-6}$
0683	$<1 \times 10^{-6}$

SSC <u>Serial Number</u>	Leak Rate <u>cc/he/sec/1.5psi</u>
0810	<1 X 10 ⁻⁶
0816	<1 X 10 ⁻⁶
0823	<1 X 10 ⁻⁶
0859	<1 X 10 ⁻⁶
1022	<1 X 10 ⁻⁶
1229	<1 X 10 ⁻⁶
1300	<1 X 10 ⁻⁶
1306	<1 X 10 ⁻⁶
1330	<1 X 10 ⁻⁶
1421	<1 X 10 ⁻⁶
1440	<1 X 10 ⁻⁶
1498	<1 X 10 ⁻⁶
1500	<1 X 10 ⁻⁶
1510	<1 X 10 ⁻⁶
1525	<1 X 10 ⁻⁶
1687	<1 X 10 ⁻⁶
1702	<1 X 10 ⁻⁶
1731	<1 X 10 ⁻⁶
1746	<1 X 10 ⁻⁶
1850	<1 X 10 ⁻⁶
1963	<1 X 10 ⁻⁶
1999	<1 X 10 ⁻⁶
2379	<1 X 10 ⁻⁶
2544	2 X 10 ⁻⁶
2571	<1 X 10 ⁻⁶
2583	<1 X 10 ⁻⁶
0000	<1 X 10 ⁻⁶

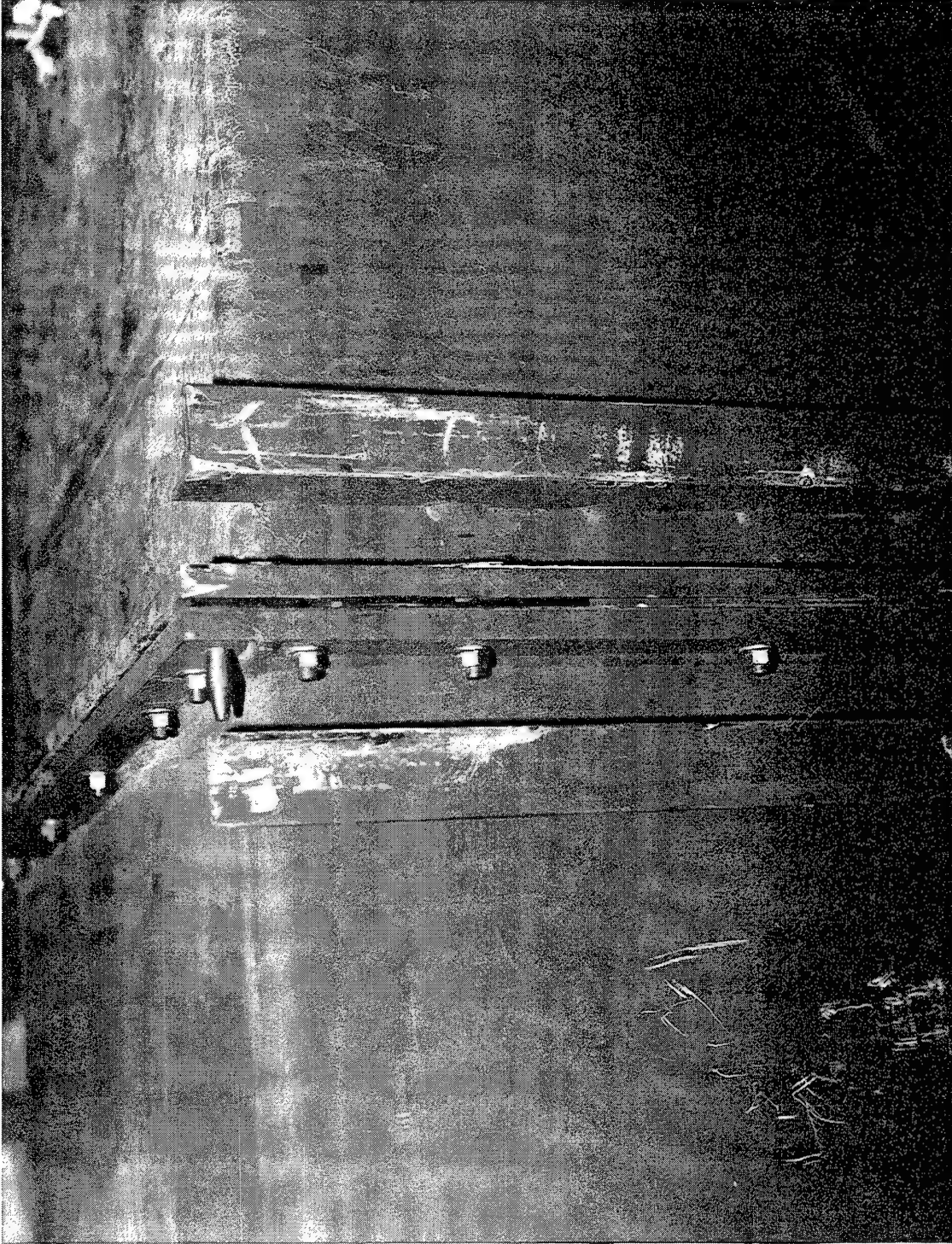
SSC <u>Serial Number</u>	Leak Rate <u>cc/he/sec/1.5psi</u>
2587	$<1 \times 10^{-6}$
2595	$<1 \times 10^{-6}$
2612	$<1 \times 10^{-6}$
2690	$<1 \times 10^{-6}$
2718	$<1 \times 10^{-6}$
2745	$<1 \times 10^{-6}$
2746	$<1 \times 10^{-6}$
2749	$<1 \times 10^{-6}$
2993	$<1 \times 10^{-6}$
0000	$<1 \times 10^{-6}$
2821	$<1 \times 10^{-6}$
2830	$<1 \times 10^{-6}$
2918	$<1 \times 10^{-6}$
3037	$<1 \times 10^{-6}$
3063	$<1 \times 10^{-6}$
3068	$<1 \times 10^{-6}$
3117	4×10^{-6}
3135	$<1 \times 10^{-6}$
0000	$<1 \times 10^{-6}$
3215	$<1 \times 10^{-6}$
3270	$<1 \times 10^{-6}$
3423	$<1 \times 10^{-6}$
3437	2×10^{-6}
4070	$<1 \times 10^{-6}$
4095	$<1 \times 10^{-6}$
6060	$<1 \times 10^{-6}$

PART 6

PHOTOGRAPHS



U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL - SAVANNA, IL	
PHOTO NO. SCN95-122-1296: This photo shows the side view of a double SSC.	



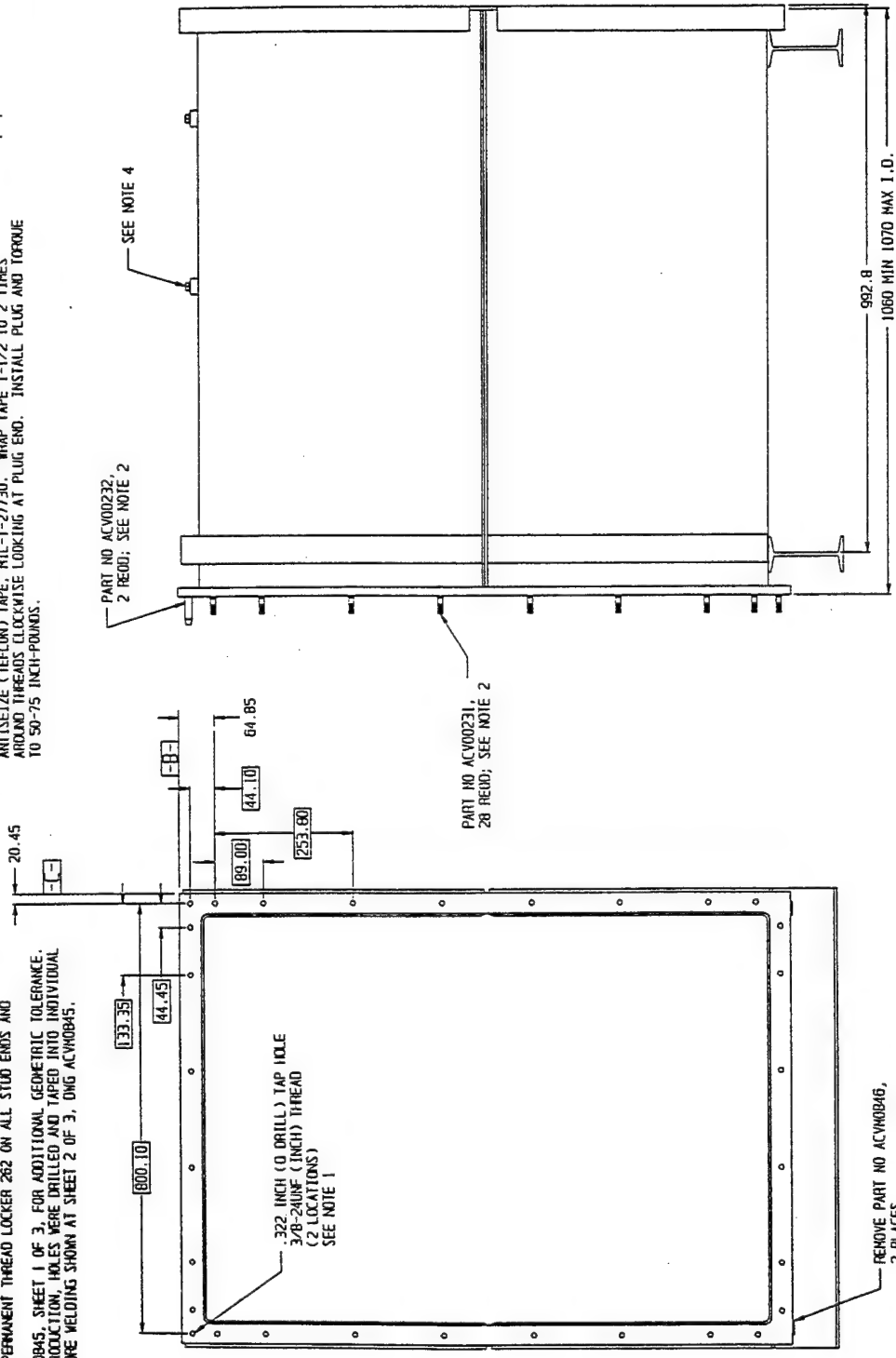
	U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL - SAVANNA, IL	
PHOTO NO. SCN95-122-1297: This photo is a close up of the top flange and corner. Note guide pin for aligning SSC flanges during the joining process.		

PART 7

DRAWINGS

REV	DESCRIPTION	DATE	APPROVED
1	RELEASED FOR PRODUCTION	94-03-04	SPRAGUE
2	MA TAP HOLE IS INCH DIMENSION	94-03-16	

- NOTES:
1. ADD A DRILL & TAP HOLE AT EACH TOP CORNER FOR ALIGNMENT PIN. PART NO ACV00232. LOCATION IS BY GEOMETRIC TOLERANCE IN MILLIMETERS.
 2. USE "LOCK-TITE" PERMANENT THREAD LOCKER 262 ON ALL STUD ENDS AND ALIGNMENT PINS.
 3. SEE DRAWING ACV00845, SHEET 1 OF 3, FOR ADDITIONAL GEOMETRIC TOLERANCE. DURING ORIGINAL PRODUCTION, HOLES WERE DRILLED AND TAPED INTO INDIVIDUAL STEEL STRIPS BEFORE WELDING SHOWN AT SHEET 2 OF 3, DNG ACV00845.
 4. REMOVE "SMAGELOK" AND RETAIN FOR FUTURE USE. REPLACE WITH 1/4-18 PLUG, PIPE-SQUARE HEAD, IRON OR STEEL, ZINK COATED. SEAL THE PLUG WITH ANTISETZE (TEFLON) TAPE, MIL-1-27730. WRAP TAPE 1-1/2 TO 2 TIMES AROUND THREADS CLOCKWISE LOOKING AT PLUG END. INSTALL PLUG AND TORQUE TO 50-75 INCH-POUNDS.



PART NO. ACV00230-2
ALTERED ITEM DRAWING

DESIGN ACTIVITY	U.S. ARMY ARMED SERVICES ENGINEERING CENTER SILVERDALE, ILLINOIS 61074-2000
PROJECT	SPRAGUE
DATE	94-01-10
BY	WILLIAM F. ERNST
CHECKED BY	WILLIAM F. ERNST
APPROVED BY	WILLIAM F. ERNST
SCALE	1/4"
SHEET	2 OF 4

ALTERED ITEM IS PART NO ACV00840

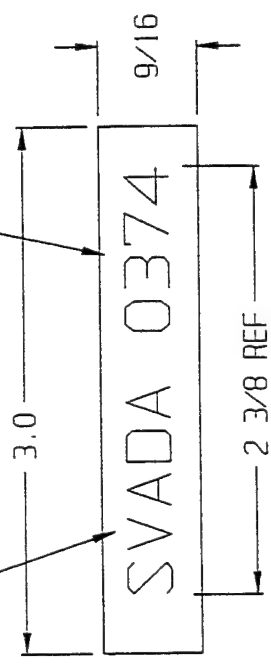
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NOTES:

1. MATERIAL: 12 GA (.1046) HOT OR COLD ROLLED SHEET STEEL.
2. SERIAL NUMBER "SVADA XXXX" SHALL BE APPLIED BY METAL STAMP 1/4 INCH HIGH TO A DEPTH THAT WILL BE LEGIBLE AFTER PAINTING.

INDICATES THE DEPOT
DOING THE MODIFICATION

THE NUMERIC NUMBER TO BE THE SAME
AS THE NUMBER APPEARING ON
MATCHED PART NO ACVM0230-2



PART NO ACVM0230-4

REVISION	
DESCRIPTION	DATE
RELEASED FOR PRODUCTION	94-03-04
APPROVED	SPRAGUE

LTR		-	
-----	--	---	--

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES. BREAK SHARP CORNERS AND EDGES.	
TOLERANCES ON	± 1/16
FRACTIONS	±
DECIMALS	±
ANGLES	±
MATERIAL	

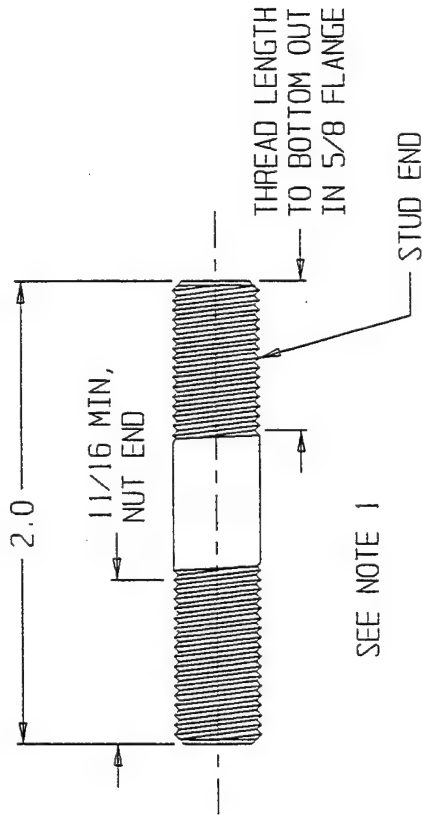
DATE	94-01-10	DESIGN ACTIVITY	U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND DEFENSE AMMUNITION CENTER AND SCHOOL SAVANNAH, ILLINOIS 61074-9639
DTSM	CHECKER	PROJECT	SPRAGUE
DIW			
SPECIAL-REV	JHK THOMAS J MICHELS CHIEF, SUPPLY ENGINEERING DIV		
SERIALIZED	WILLIAM F ERNST CHIEF, LOGISTICS ENGINEERING OFFICE		
APPROVED BY OFFICE OF COMMANDING GENERAL, U.S. ARMY MATERIAL COMMAND (AMC)	WILLIAM F ERNST		

ACVM0230-3	USED ON	SCALE	1-1/2	UNIT	WT	SHEET	4 OF 4
NEXT ASSY							
APPLICATION							

DISTRIBUTION STATEMENT A, UNLIMITED	
--	--

NOTES:

- 3/8-24 UNF X 2 INCH LENGTH, RIGHT HAND THREAD LENGTHS AS SHOWN, GRADE 8 (150,000 PSI MINIMUM TENSILE STRENGTH), PER SAE J429, CADMIUM PLATED PER QQ-P-416, TYPE II CLASS 2 THREAD.



PART NO ACV00231-1

REVISION			
LTR	DESCRIPTION	DATE	APPROVED
-	RELEASED FOR PRODUCTION	94-03-04	SPRAGUE
XA	CORRECT SPELLING ERROR	94-03-08	

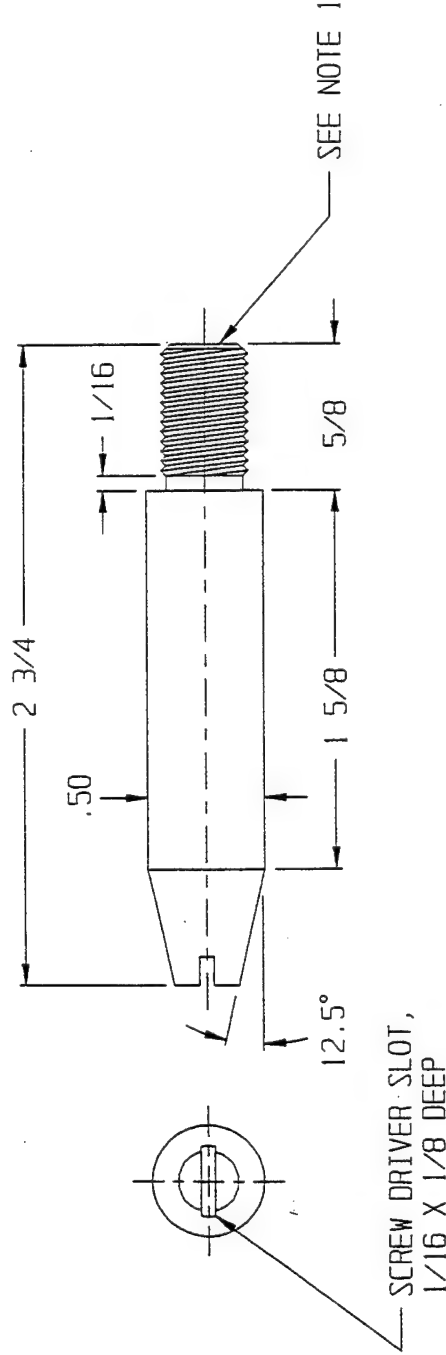
UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES. BREAK SHARP CORNERS AND EDGES.		DATE 94-01-10		DESIGN ACTIVITY U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND DEFENSE AMMUNITION CENTER AND SCHOOL SAVANNA, ILLINOIS 61074-9639	
TOLERANCES ON		DIW	CHECKER	PROJ ENGR	
FRACTIONS	± 1/16	JHK	THOMAS J MICHELS	SPRAGUE	
DECIMALS	±				
ANGLES	±				
MATERIAL		SUBMITTED			
		WILLIAM F ERNST			
		CHIEF, LOGISTICS ENGINEERING OFFICE			
		APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY TALENT CENTER (AMC)			
		WILLIAM F ERNST			
		U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL			
ACV00230-2		CAGE CODE		ACV00231	
NEXT ASSY	USED ON	SIZE		B 28620	
APPLICATION		SCALE		2 UNIT WT	
		SHEET		1 OF 1	

DISTRIBUTION STATEMENT A,
UNLIMITED

NOTES:

1. 3/8-24 UNF, RIGHT HAND THREAD.
2. MATERIAL: 1045, MEDIUM CARBON, COLD FINISH ROUND BAR STOCK.

REVISION			
LTR	DESCRIPTION	DATE	APPROVED
-	RELEASED FOR PRODUCTION	94-03-04	SPRAGUE
XA	CORRECT SPELLING ERRORS	94-03-08	SPRAGUE
XB	CHANGED DIAMETER TO .50	94-03-16	



PART NO ACV00232-1

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES. SHARP CORNERS AND EDGES.		DATE		94-01-10		DESIGN ACTIVITY		U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND DEFENSE AMMUNITION CENTER AND SCHOOL SAVANNA, ILLINOIS 61074-9639	
		DIW	CHECKER	PROJ ENGR	SPRAGUE		ALIGNMENT PIN, 3/8-24UNF, SECONDARY STEEL CONTAINER, COUPLED		
TOLERANCES ON		SYNOPSIS		JHK THOMAS J MICHELS CHIEF, SUPPLY ENGINEERING DIV		SIZE		CAGE CODE	
FRACTIONS		SUBMITTED		WILLIAM F ERNST CHIEF, LOGISTICS ENGINEERING OFFICE		B		28620	
DECIMALS		APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND (AMC)		WILLIAM F ERNST		SCALE		2	
ANGLES		MATERIAL				UNIT WT		SHEET 1 OF 1	
ACV0230-2		NEXT ASSY		USED ON		APPLICATION		DISTRIBUTION STATEMENT A, UNLIMITED	

TEST METHOD II

COMPLETE THE APPROPRIATE TORQUE SEQUENCE FOR THE CONTAINER.

1. COMPLETE THE APPROPRIATE TORQUE SEQUENCE FOR THE CONTAINER.
2. CONNECT HELIUM SOURCE TO SWAGELOCK. IF INSTALLED, OR INSTALL SCHRAEDER VALVE TO MAKE THE CONNECTION.
3. PRESSURIZE CONTAINER TO 5 ± 1 PSI WITH HELIUM.
4. USE MASS SPECTROMETER WITH QUICK TEST PROBE TO CHECK ALL WELDS, AND FLANGE JOINTS TO INCLUDE AREA AROUND BOLTS/STUDS. RECORDED LEAK RATE NOT TO EXCEED 1×10^{-6} CCUBIC CENTIMETERS HELIUM PER 3 ATMOSPHERES PER SECOND (1×10^{-6} cc He/3Atm/Sec) OR THE LEAK RATE REQUIREMENTS OF THE CONTAINER.
5. CONTAINERS EXCEEDING THE LEAK RATE IN STEP 4 SHALL HAVE THE LEAK POINT(S) IDENTIFIED FOR REPAIR.
6. AFTER REPAIR, CONTAINER WILL BE RE-TESTED IN ACCORDANCE WITH STEPS 1-4 ABOVE. THE HELIUM FROM THE PREVIOUS TEST MUST HAVE DISPERSED INTO THE SURROUNDING AIR BEFORE AN ACCURATE READING CAN BE OBTAINED ON ANY NEW TEST.
7. IF A SCHRAEDER VALVE WAS INSTALLED; REMOVE SCHRAEDER VALVE AND INSTALL A PIPE PLUG IN ACCORDANCE WITH NOTE 1.

1. COMPLETE THE APPROPRIATE TORQUE SEQUENCE FOR THE CONTAINER.

2. CONNECT THE VACUUM PUMP INLET HOSE INTO A PLUG OR THE TEST SAMPLE.
3. BLOCK THE TEST CONTAINER A FOOT OFF THE FLOOR WITH THE CONTAINER OVERHANGING THE BLOCKING.
4. EVACUATE THE CONTAINER TO 0 ATMOSPHERE.
5. COVER THE CONTAINER WITH PLASTIC SHEETING DRAPING ON ALL 4 SIDES AND HELD AT THE FLOOR LINE BY A ROPE OR OTHER SUITABLE MEANS TO FORM A COMPLETE INVERTED BAG. INSURE THE PLASTIC IS WITHOUT HOLES.
6. ADMIT HELIUM INTO THE BAG AT THE BOTTOM UNTIL THE BAG STARTS TO EXPAND LIKE A BALLOON (TEST SPECIMEN SURROUNDED BY A HELIUM RICH ATMOSPHERE).
7. MONITOR THE EXHAUST OF THE VACUUM PUMP WHICH HAS BEEN CONTINUOUSLY RUNNING SINCE STEP 4. THE RECORDED LEAK RATE IS NOT TO EXCEED 1×10^{-4} CUBIC CENTIMETERS HELIUM PER ATMOSPHERE PER SECOND ($1 \times 10^{-4} \text{ cc He/Atm/Sec}$) OR THE LEAK RATE REQUIREMENTS OF THE CONTAINER. THE MONITORING TIME IS TO BE AT LEAST 5 MINUTES FROM THE END OF STEP 6.
8. CONTAINERS EXCEEDING LEAK RATE AT STEP 7 WILL BE REMOVED FROM THE INVERTED PLASTIC BAG AND LEAK POINTS IDENTIFIED FOR REPAIR BY TEST METHOD I.
9. AFTER REPAIR, THE CONTAINER WILL BE RE-TESTED IN ACCORDANCE WITH STEPS 1-7 ABOVE.
10. REMOVE THE VACUUM HOSE FROM TEST SAMPLE AND INSTALL A PIPE PLUG IN ACCORDANCE WITH NOTE 1.

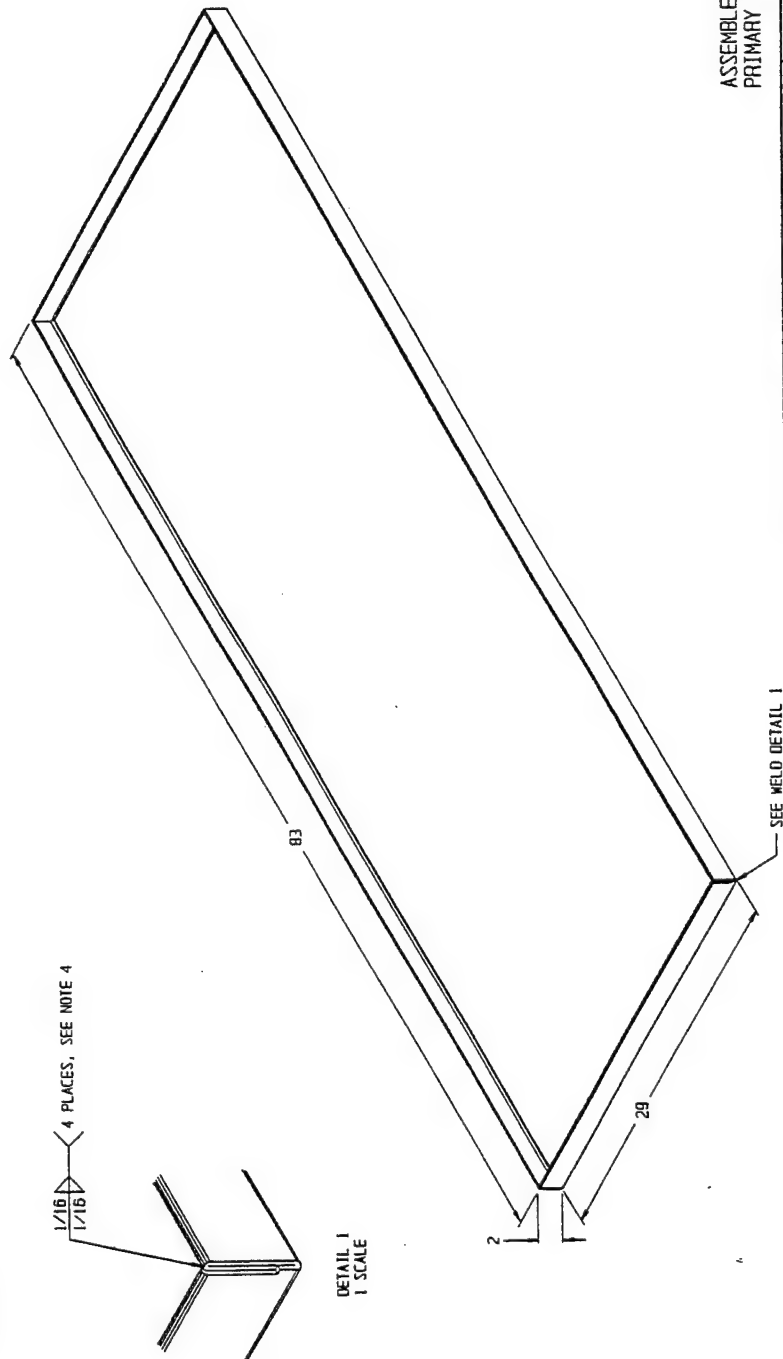
NOTES:

1. TO INSTALL PIPE PLUG AFTER TESTING, SEAL THE PLUG WITH ANTISEIZE (TEFLON) TAPE, MIL-1-27730. WRAP TAPE 1-1/2 TO 2 TIMES AROUND THREADS COUNTERCLOCKWISE (IF LOOKING AT PLUG HEAD) OR CLOCKWISE (IF LOOKING AT PLUG END). INSTALL PIPE PLUG AND TORQUE TO 50-75 INCH-POUNDS.

[illegible]

DISTRIBUTION STATEMENT A, UNLIMITED

- NOTES:
1. REFER TO APPROPRIATE DRAWING FOR USE OF PAN WITH TOXIC CHEMICAL HUNTIONS.
2. REFERENCE DIMENSIONS ARE SHOWN. REFER TO SHEET 4 OF 4 FOR FINISHED TOLERANCES.
3. SEE SHEET 2 OF 4 FOR FLAT DIMENSIONS AND FORMING.
4. THE CORNERS ARE TO BE FULL WELDED AT ALL JUNCTIONS INSIDE AND OUT TO ACHIEVE "NO LEAKS" (WATER TEST).
5. EITHER DESIGN FABRICATION IS ACCEPTABLE; SINGLE PIECE OR THREE PIECE.
6. ESTIMATED WEIGHT OF THE PAN IS 67 POUNDS.



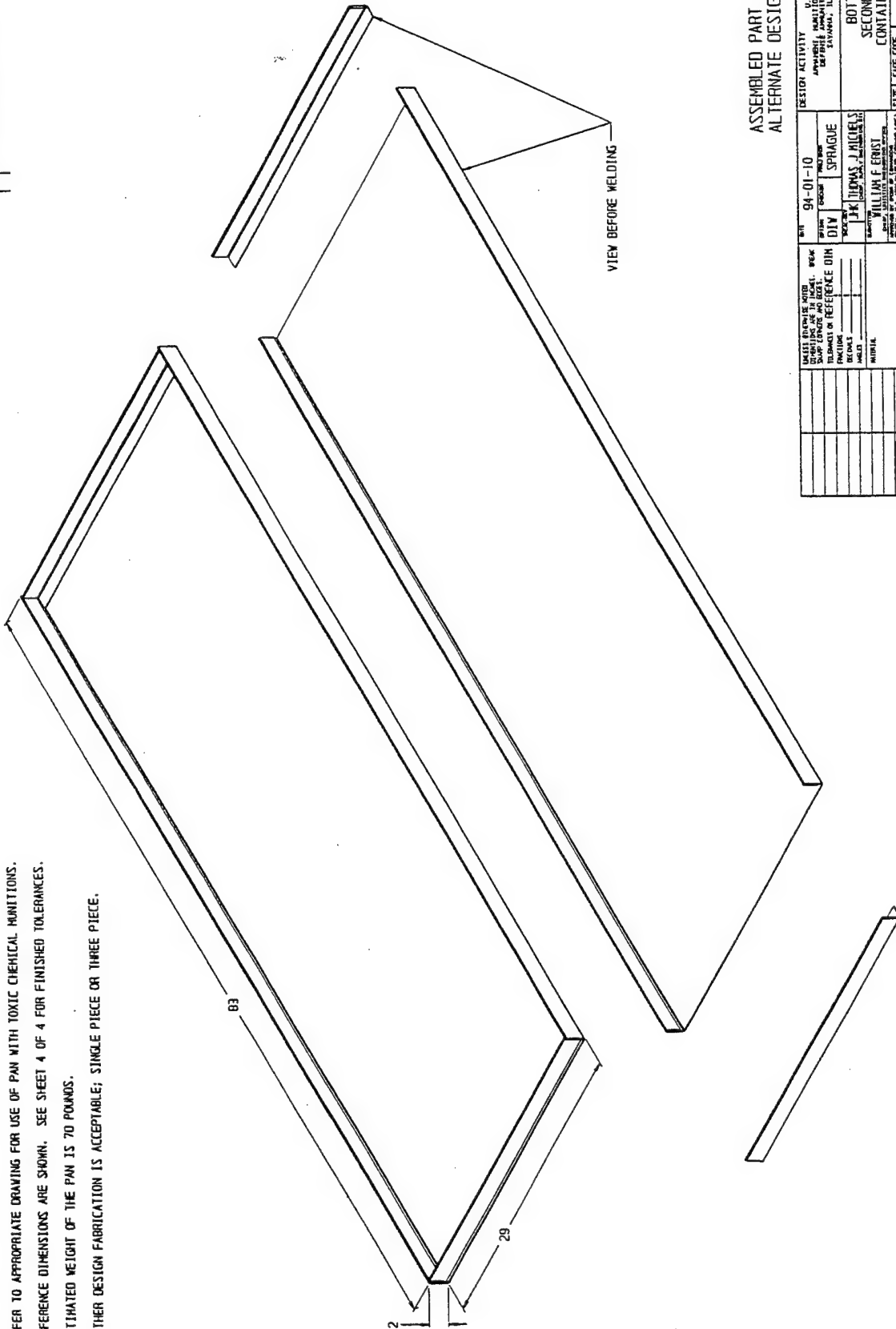
SEE WELD DETAIL 1

[illegible]

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NOTES:

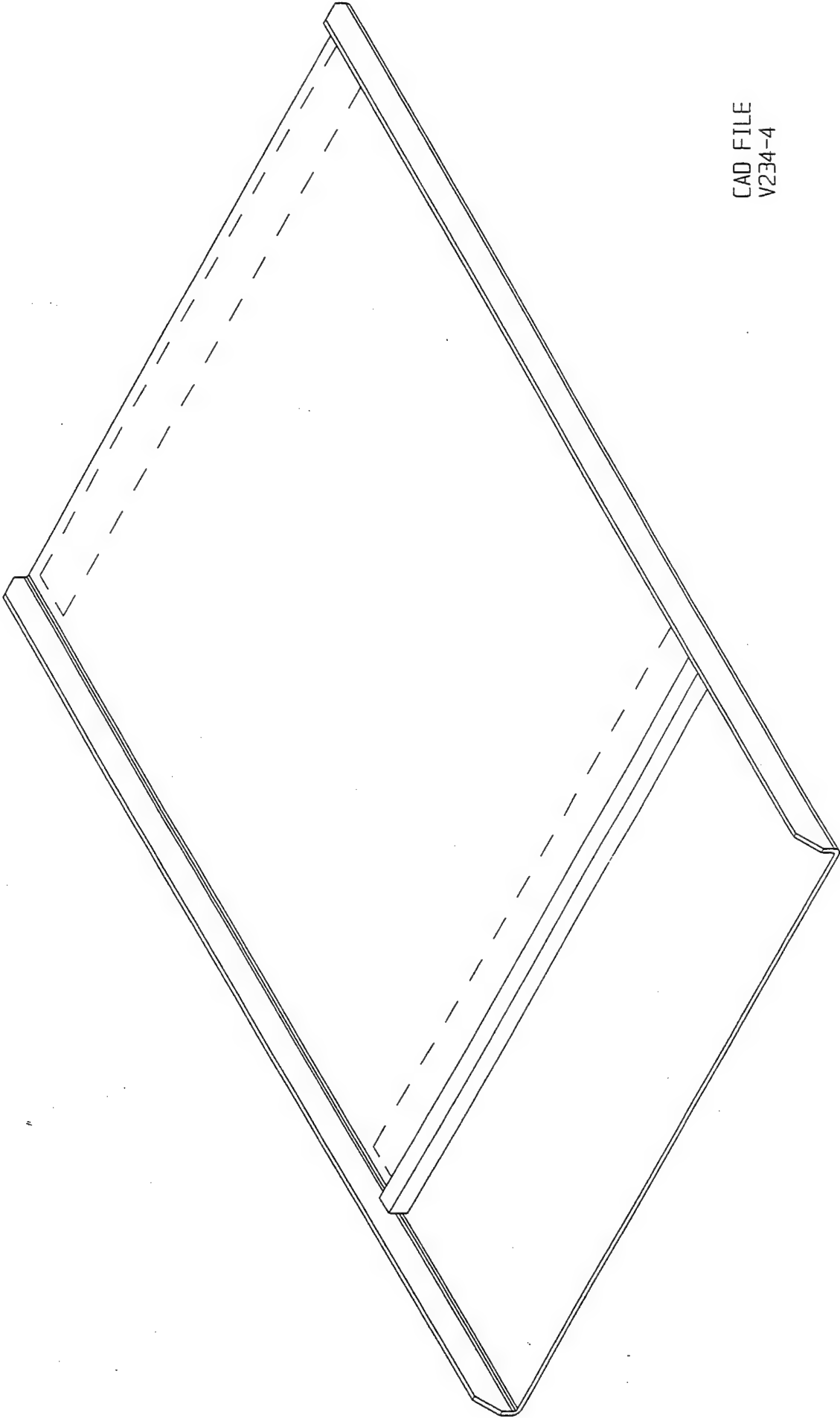
1. REFER TO APPROPRIATE DRAWING FOR USE OF PAN WITH TOXIC CHEMICAL MUNITIONS.
2. REFERENCE DIMENSIONS ARE SHOWN. SEE SHEET 4 OF 4 FOR FINISHED TOLERANCES.
3. ESTIMATED WEIGHT OF THE PAN IS 70 POUNDS.
4. EITHER DESIGN FABRICATION IS ACCEPTABLE; SINGLE PIECE OR THREE PIECE.



ASSEMBLED PART NO ACV00235-1
ALTERNATE DESIGN; 3 PIECE

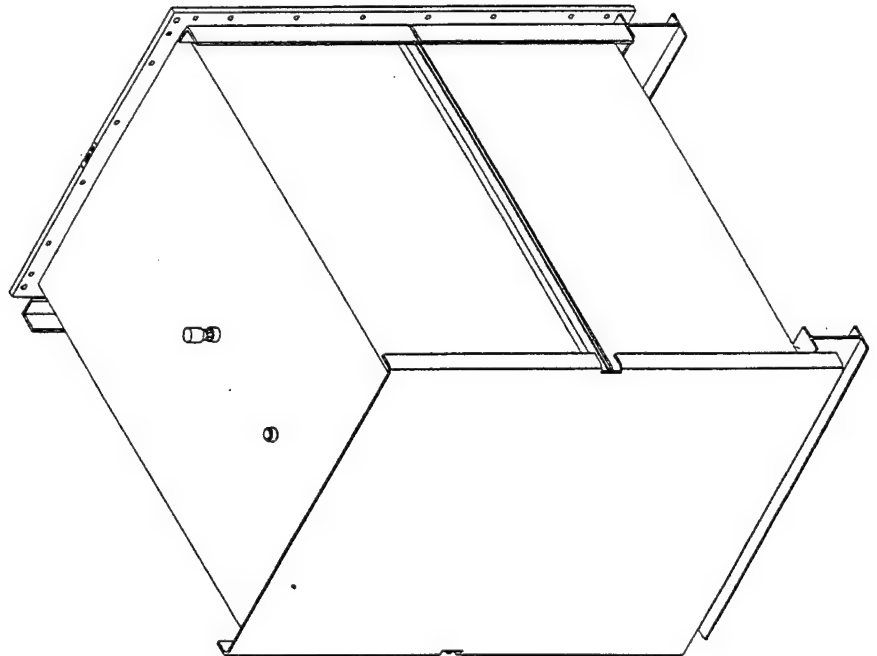
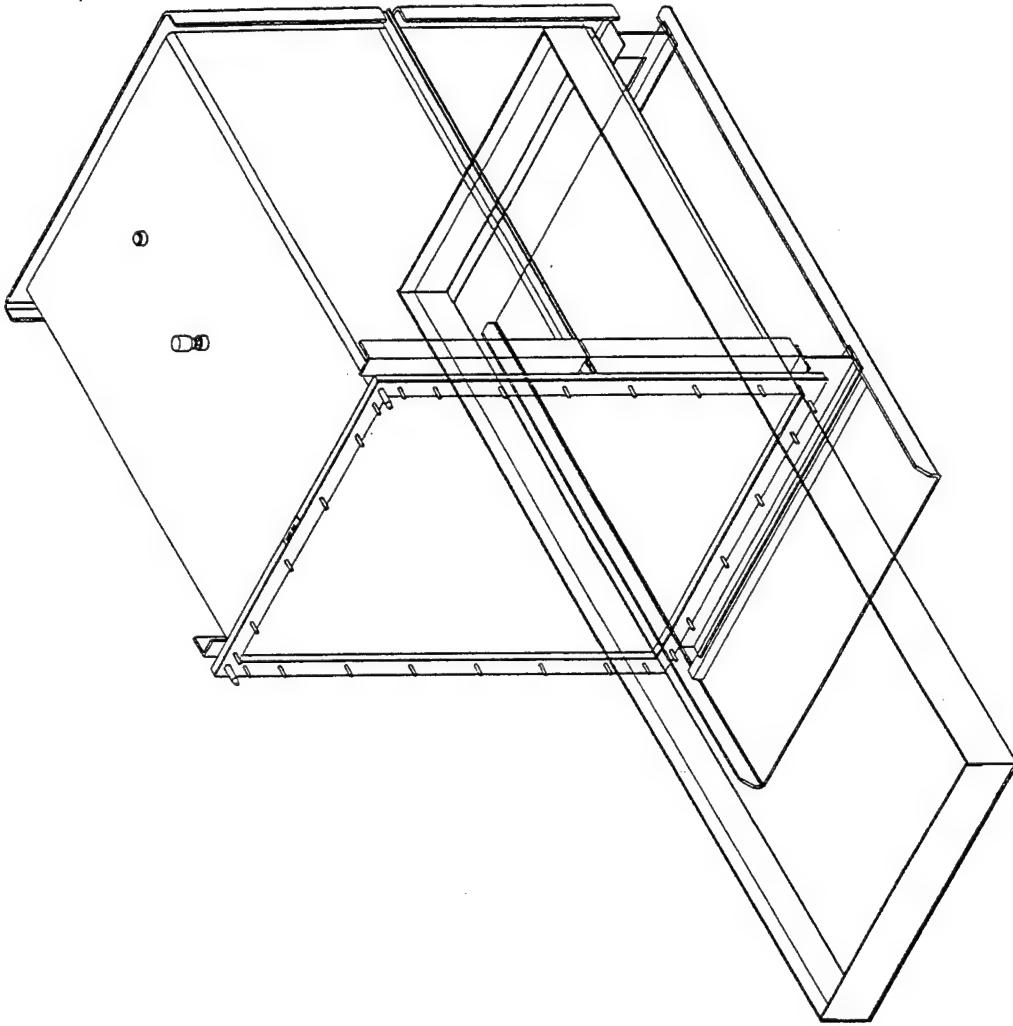
UNLESS OTHERWISE NOTED, SPECIFICATIONS SHALL BE TO THE FOLLOWING: DIMENSIONS IN INCHES, TOLERANCES IN THOUSITHS OF AN INCH, UNLESS OTHERWISE SPECIFIED.		DATE: 94-01-10		DESIGN ACTIVITY: SPRAGUE	
DRAWN BY: J. J. JONES, JR.		CHECKED BY: J. J. JONES, JR.		DESIGNED BY: J. J. JONES, JR.	
APPROVED BY: WILLIAM F. ERNST		DATE: 94-01-10		DESIGNED BY: J. J. JONES, JR.	
MATERIAL: STEEL		QUANTITY: 3		DESIGNED BY: J. J. JONES, JR.	
APPLICATION: BOTTOM PAN, SECONDARY STEEL CONTAINER, COUPLED		SCALE: 1/4"		SHEET 3 OF 4	

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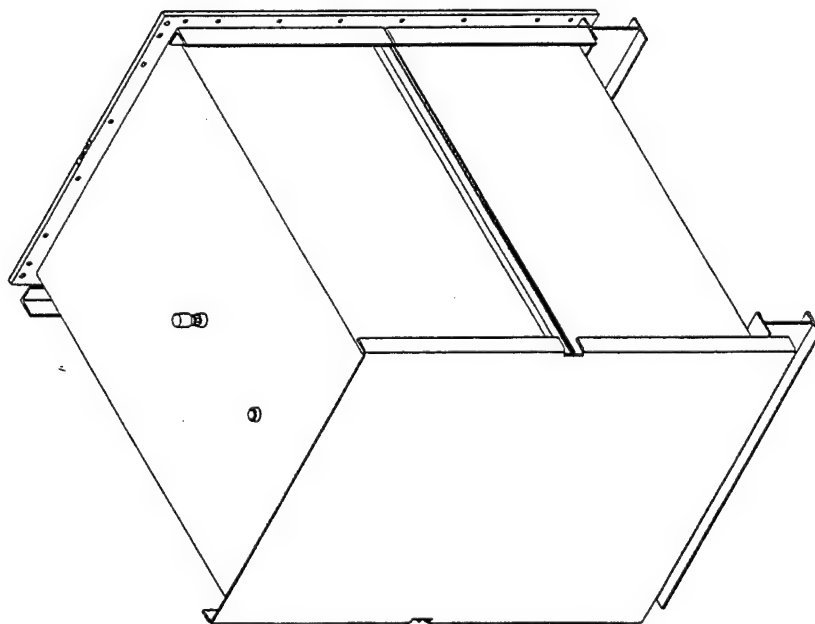
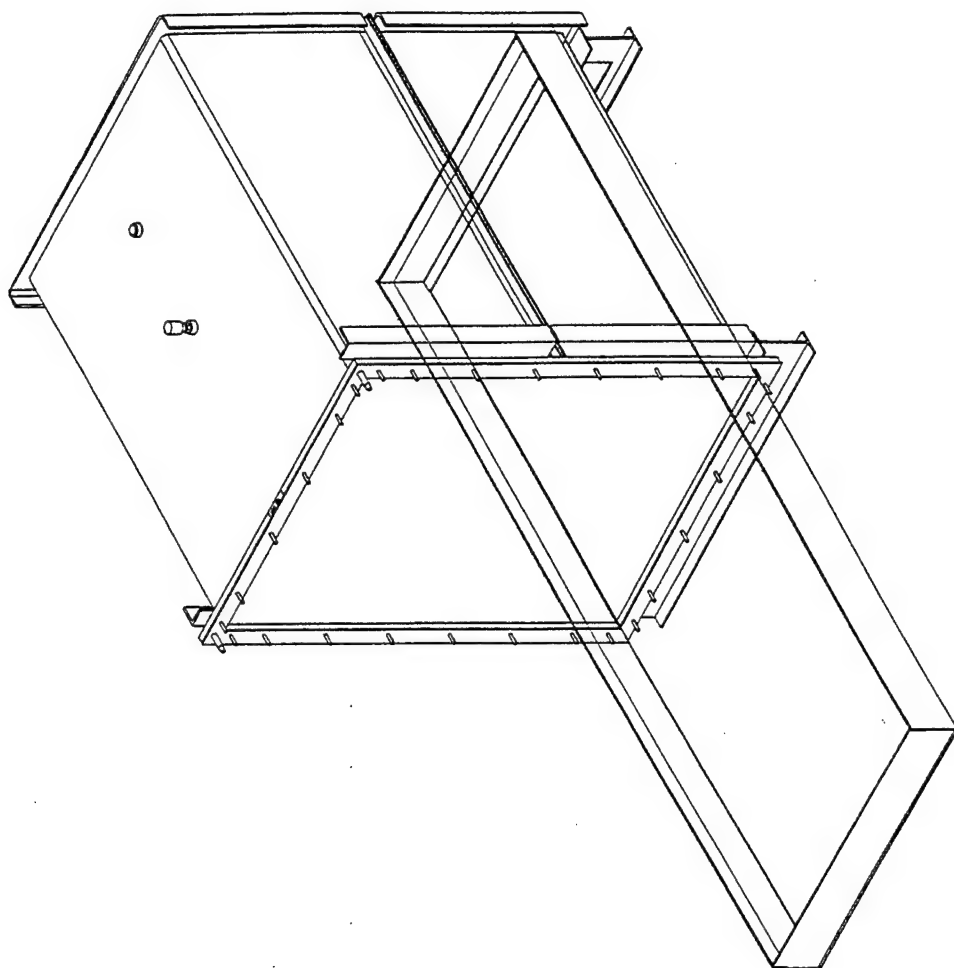


CAD FILE
V234-4

CAD FILE
SSCRAIL-2.PRT



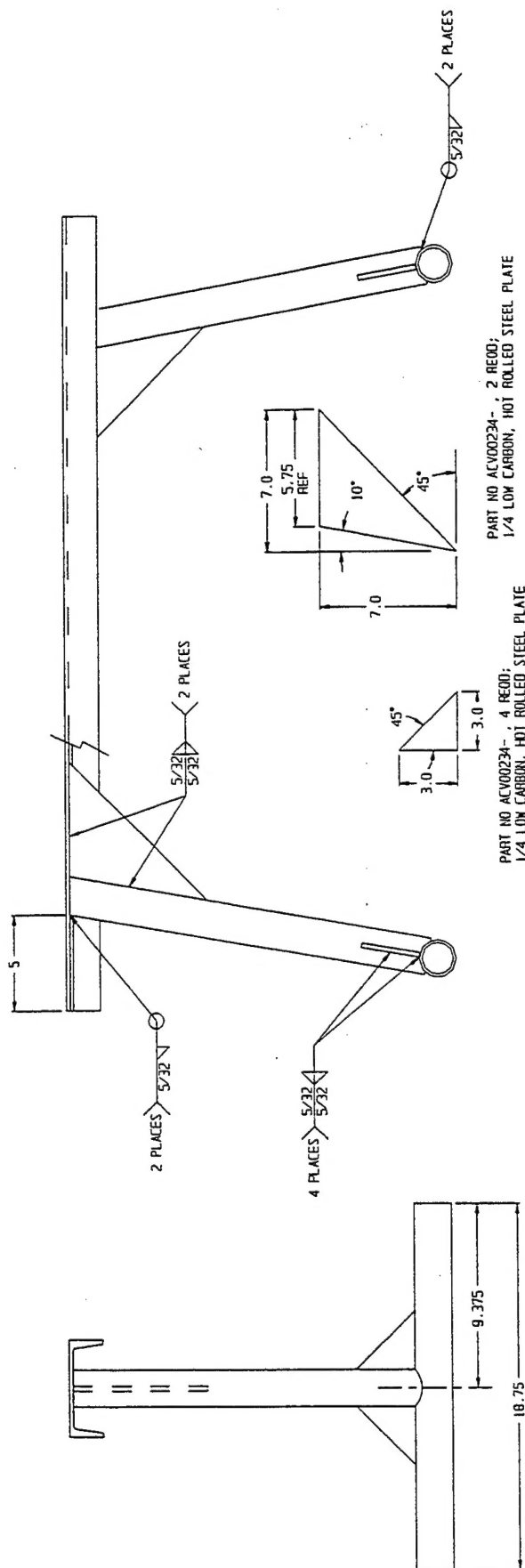
CAD FILE
SSCRAIL.PRT



1. A SAFETY STAND (2 STEEL SAW HORSES) IS USED TO SUPPORT THE COUPLED SSC CONTAINERS AFTER THE INITIAL SNUGGING OF THE NUTS AT TOP AND TWO SIDES OF THE FLANGE. THE STAND ALLOWS FOR A SAFE TORQUE SEQUENCE OF ALL NUTS. THE COUPLED CONTAINERS ARE PLACED ON THE SAFETY STAND BY A FORK LIFT TRUCK.

PART NO. ACV00234-
SAFETY STAND USAGEDISTRIBUTION STATEMENT A, UNLIMITED

REVISION		DATE	APPROVED
DESCRIPTION	YY-HH-00	YY-HH-00	
PRODUCT BASELINE	YY-HH-00		
ERR 000000	YY-HH-00		



PART NO ACV00234 - 2 REOD;
1/4 LOW CARBON, HOT ROLLED STEEL PLATE

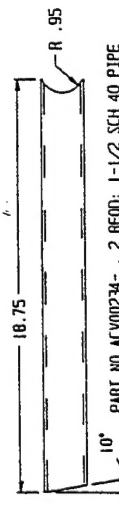
PART NO ACV00234 - 4 REOD;
1/4 LOW CARBON, HOT ROLLED STEEL PLATE

CAO FILE
V234-3

ASSEMBLY PART NO. ACV00234 -
TWO ASSEMBLIES REQUIRED FOR
SAFETY STAND

PART NO ACV00234 - 1 REOD;
4 INCH - 5.4 IBS/FT STRUCTURAL STEEL CHANNEL

PART NO ACV00234 - 2 REOD; 1-1/2 SCH 40 PIPE

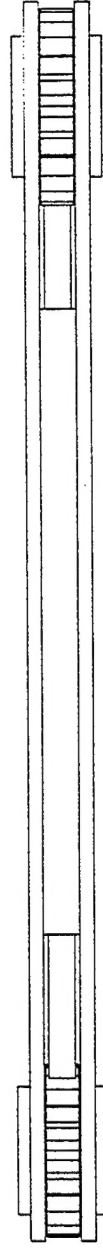
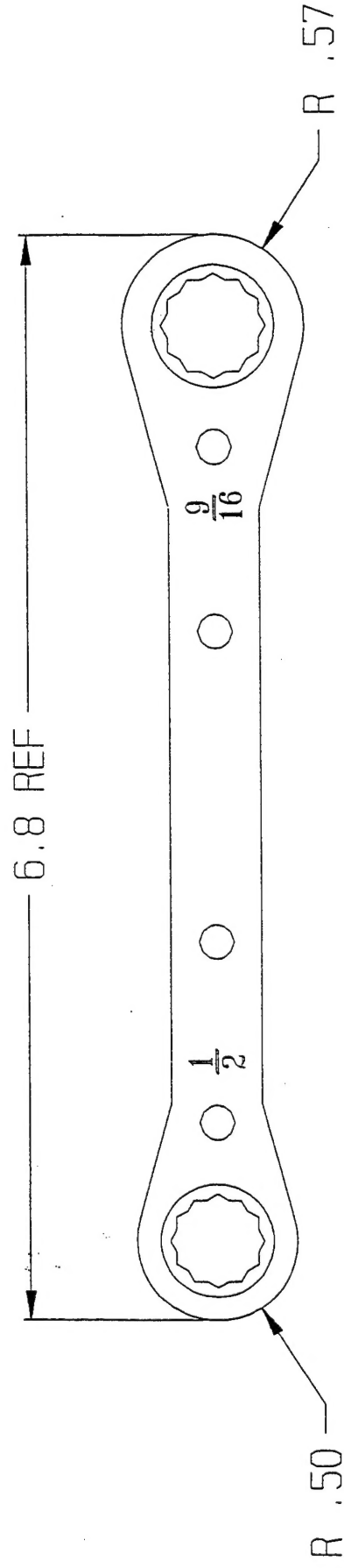


PART NO ACV00234 - 2 REOD; 1-1/2 SCH 40 PIPE

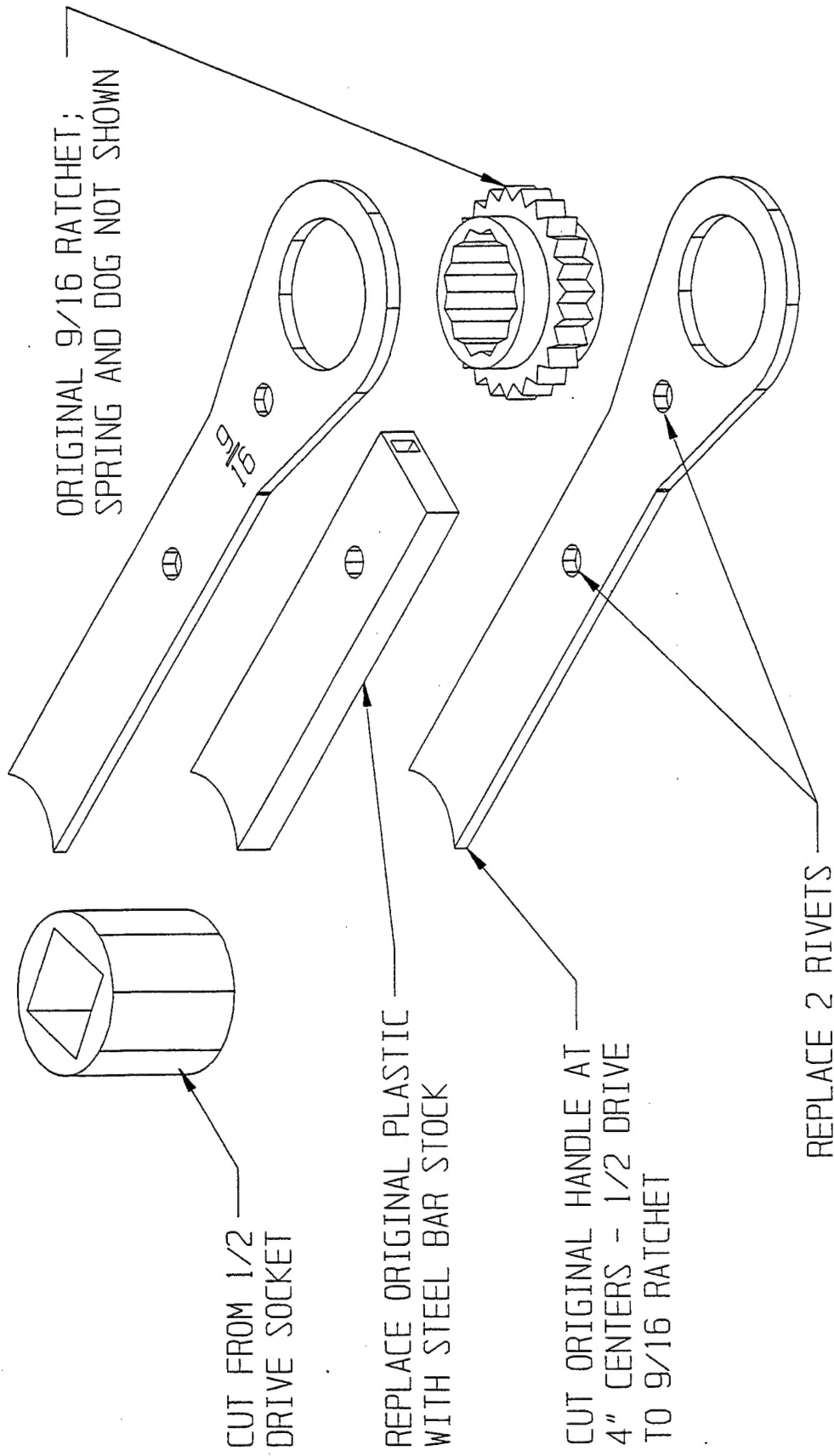
DESIGN ACTIVITY		U.S. ARMY ENGINEERING CENTER FORT BELVOIR, VIRGINIA 22060-5000	
DATE	94-02-08	PROJECT	SPRAGUE
BY	DTIC	DESIGNER	DTIC
CHECKED BY	DTIC	APPROVED BY	DTIC
TITLE		SUPPORT EQUIPMENT, SECONDARY STEEL CONTAINER, COUPLED	
SIZE	D	DATE	3/8
SCALE	3/8	UNIT	VI
SHEET #		OF #	
ACV00234			

DISTRIBUTION STATEMENT A, UNLIMITED

1/2 X 9/16 STANDARD RATCHET BOX WRENCH
McMASTER-CARR PART NO 5461A33

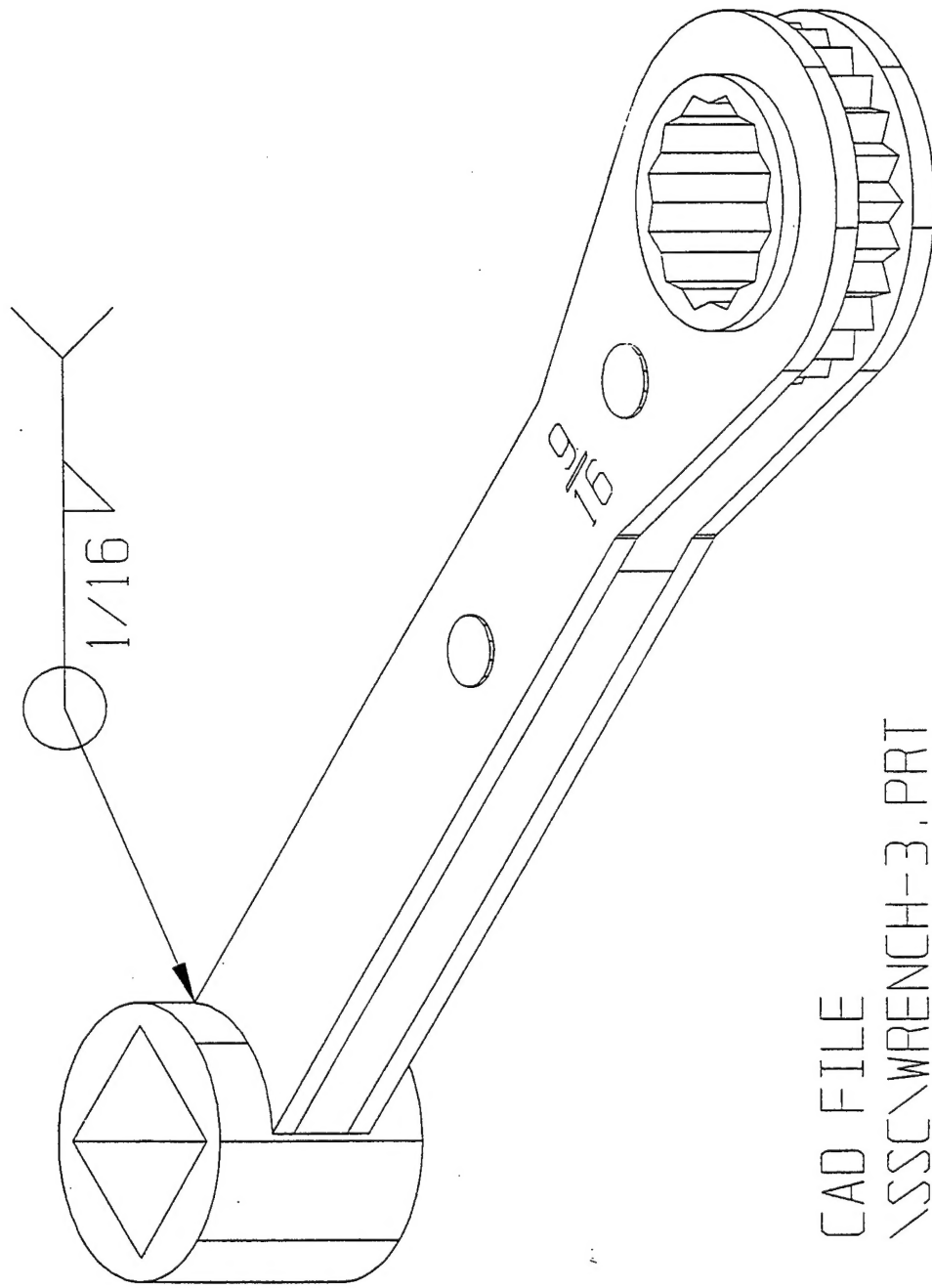


CAD FILE
\\SSC\\WRENCH-1.PRT



CAD FILE
\\SSC\\WRENCH-2.PRT

9/16 RATCHET BOX CROW-FOOT WRENCH, 1/2 DRIVE



CAD FILE
\\SSC\\WRENCH-3.PRT